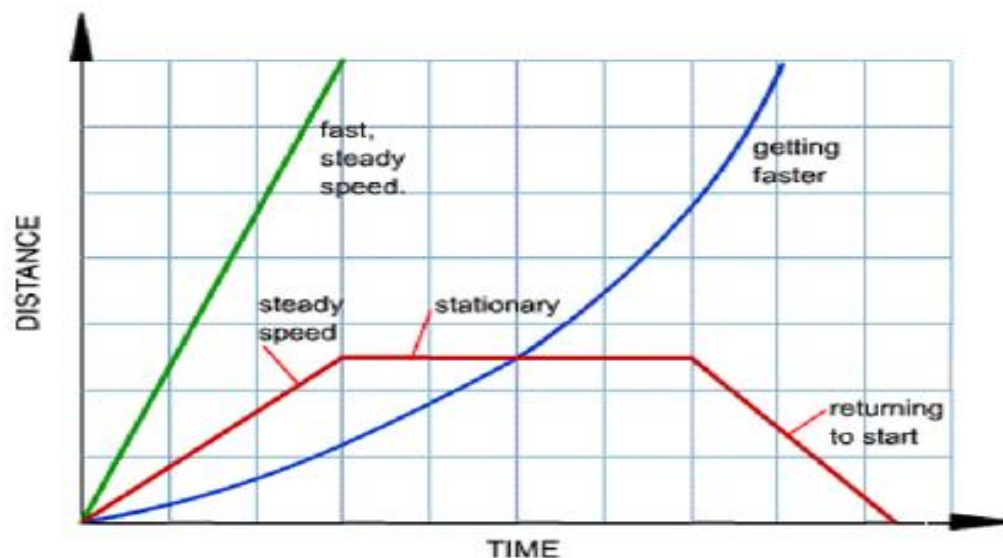




- 1 A **scalar** quantity has only a **magnitude** but a **vector** quantity has both a **magnitude** and a **direction**.
- 2 An example of a scalar quantity is **speed** and an example of a vector quantity is **velocity** (which is speed in a given direction).
- 3 The standard unit for **time** is seconds (**s**)
- 4 The standard unit for **distance** is metres (**m**)
- 5 Speed = distance ÷ time
- 6 The standard units for both **speed** and **velocity** are **m/s**
- 7 A typical walking speed is 1.5 m/s
- 8 A typical running speed is 3 m/s
- 9 A typical cycling speed is 6 m/s
- 10 On a **distance–time** graph, a **flat line** tells you that the object is not moving (**stationary**). A steeped, straight line tells you that the object is travelling a constant or steady speed.
- 11 To calculate the **speed** or velocity from a **distance–time** graph you need to calculate the **gradient** of the line.
- 12 Acceleration is the rate of change of velocity and the standard unit for acceleration is m/s<sup>2</sup>
- 13 Acceleration = (final velocity – initial velocity) ÷ time taken
- 14 Acceleration can also be calculated using the equation  
Final velocity squared – initial velocity squared = 2 x acceleration x distance  $V^2 - U^2 = 2ax$
- 15 A flat, straight line on a velocity – time graph tells you that the object is travelling at a constant or steady speed. A steeped, straight line tells you that the object is accelerating.
- 16 To calculate the distance travelled from a velocity – time graph you need to calculate the area under the graph.



$$a = \frac{v - u}{t}$$

$$V^2 - U^2 = 2ax$$

